In the Specification:

Please delete the heading at **page 1, above line 1**, as follows:

~~LITERAL TRANSLATION OF PCT INTERNATIONAL APPLICATION PCT/EP00/05210 FILED ON JUNE 7, 2000~~

Please insert a new heading at **page 1, above line 1**, as follows:

TITLE OF THE INVENTION

Please insert a new heading at **page 1, above line 3**, as follows

FIELD OF THE INVENTION

Please amend the paragraph at **page 1, lines 3 to 6**, as follows:

The invention relates to an electromagnetic actuator ~~according to the preamble of the patent claim 1~~ and a method for ~~the~~ adjusting ~~of~~ an electromagnetic actuator. ~~actuator according to the preamble of the patent claim 6~~.

Please insert a new heading at **page 1, above line 7**, as follows:

BACKGROUND INFORMATION

Please insert a new heading at **page 1, above line 20**, as follows:

SUMMARY OF THE INVENTION

Please amend the paragraph at **page 1, line 20 to page 2, line 2**, as follows:

~~Therefore,~~ In view of the above, it is an object of the invention ~~is based on the object~~ to provide an

electromagnetic actuator ~~according to the preamble of the patent claim 1, of which~~ of the above mentioned general type, which has been further developed so that the energy requirement only slightly depends on the production tolerances. It is a further object of the invention ~~The invention is further based on the object~~ to provide a method ~~according to the preamble of the patent claim 6, through~~ of adjusting an electromagnetic actuator, by which the dependency of the energy requirement of the actuator on production tolerances is minimized.

Please **delete** the paragraph at **page 2, lines 3 to 7.**

Please insert a new paragraph at **page 2, following line 2,** as follows:

The above objects have been achieved according to the invention in an electromagnetic actuator including an armature that is arranged to move back and forth against the force of two opposed springs between two spaced-apart electromagnets due to the magnetic forces applied by the electromagnets. The above objects have further been achieved according to the invention in a method of adjusting an electromagnetic actuator of the above mentioned construction.

Please **delete** the paragraph at **page 2, lines 8 and 9.**

Please amend the paragraph at **page 3, lines 14 to 22**, as follows:

For the adjustment of this electromagnetic actuator, for each spring the ~~course~~ variation or progression of the spring force is ~~measured, which spring force arises if~~ measured as the respective spring is compressed by a spring travel distance corresponding to the stroke travel distance of the armature. The energy, which is stored in the respective spring due to the compression thereof, is determined from the measured curves or progressions of the varying spring forces over the spring travel distances of the springs. Next, the pre-stressing of one or both springs is set in such a manner that the same energy is stored in both springs.

Please insert a new heading at **page 4, above line 3**, as follows:

BRIEF DESCRIPTION OF THE DRAWINGS

Please insert a new heading at **page 4, above line 12**, as follows

DETAILED DESCRIPTION OF PREFERRED EXAMPLE EMBODIMENTS OF THE INVENTION

Please amend the paragraph at **page 4, line 12 to page 5, line 13**, into two paragraph as follows:

~~According to the~~ As shown in Fig. 1, the actuator according to the invention comprises a push rod or valve stem 4 that is in force transmitting cooperation with a gas exchange

valve 5, an armature 1 secured with the valve stem 4 perpendicularly to the valve stem longitudinal axis, an electromagnet 3 acting as a closing magnet ~~as well as~~ and a further electromagnet 2 acting as an opening magnet, which is arranged spaced apart from the closing magnet 3 in the direction of the valve stem longitudinal axis. The electromagnets 2, 3 respectively comprise [[~~an~~]] energizing or exciting ~~coil~~ coils 20 or 30, and pole surfaces lying across from one another. By means of an alternating energization of both electromagnets 2, 3, that is to say the exciting coils 20 or 30, the armature 1 is moved back and forth between the electromagnets 2, 3 along a stroke travel that is limited by the electromagnets 2, 3.

A spring arrangement ~~with~~ includes a first spring 61 acting in the opening direction onto the armature 1 via a spring support disk 60 secured to the valve stem 4, and a second spring 62 acting in the closing direction onto the armature 1 ~~effectuate that~~ via a spring support disk 63 secured to the valve stem 4. The spring arrangement holds the armature 1 ~~is held~~ in a neutral equilibrium position between the electromagnets 2, 3 in the de-energized condition of the exciting coils 20, 30. Furthermore, adjusting or setting means 71, 72 for setting the pre-stressing of the springs 61, 62 are provided. The setting means 71, 72 may, for example, be embodied as shim disks or washers, which effectuate a compression of the springs ~~71, 72,~~ 61, 62, and thereby prescribe the

pre-stressing of the respective springs ~~71, 72.~~ 61, 62. They may, however, also be controllably embodied, and enable a stepless variation of the pre-stressing.

Please amend the paragraph at **page 6, line 14 to page 7, line 23,** into two paragraphs as follows:

The stroke travel distance Im of the armature 1, over which the armature 1 travels - the motion of the armature 1 is referred to as ~~flight~~ the "flight" thereof in the following - is limited due to the prescribed spacing distance between the electromagnets 2, 3. The progressions or variations of the spring forces of the two springs 61, 62, that is to say the varying forces with which the springs 61, 62 act on the armature 1, are dependent on the armature position I and can be described in connection with spring characteristic curves.

In the force versus travel distance diagram of Fig. 2, the spring characteristic curve of the first spring 61 is referenced with F1, and the spring characteristic curve of the second spring 62 is referenced with F2. During the flight of the armature 1 from the upper end position to the lower end position, that is to say from the armature position 0 to the armature position Im, the force of the first spring 61 increases at first from a holding value F11 to a maximum value F13, which is achieved at the armature position Ix, in order to thereafter fall off to an end value F10 lying below the holding value F11, whereby the

end value F10 is achieved at the armature position Im, that is to say in connection with the armature 1 lying against the opening magnet 2. In contrast, the spring force of the second spring 62 increases from an end value F20, which is effective ~~in the~~ in the upper end position of the armature 1, monotonously but non-linearly to a holding value F21, which is achieved in the lower end position of the armature 1. The end values F10, F20 ~~give~~ represent the pre-stressing or pre-biasing of the respective spring 61 or ~~62; they~~ 62. Namely, the two springs 61 and 62 are adjusted or set in such a manner so that the area A1 under the spring characteristic curve F1 is equal to the area A2 under the spring characteristic curve F2. The areas A1 and A2 in that context correspond to the energy that is stored in the respective spring 61, 62, if these springs are compressed due to the motion of the armature. The two spring characteristic curves ~~61, 62~~ F1, F2 intersect each other at a point that prescribes the energetic center position Ie of the ~~armature 1; this~~ armature. This energetic center position Ie, which the armature 1 takes up with de-energized electromagnets 2, 3, generally does not correspond with the geometric center position between the electromagnets 2, 3 in connection with springs ~~with~~ having different spring characteristic curves.

Please amend the paragraph at **page 9, lines 8 to 20**, as follows:

The energy that is stored in the first spring 61 if the armature 1 is moved from its lower end position to its

upper end ~~position,~~ position is also measured in the same manner as described above, namely by measuring the progression or variation of the spring force of the first spring 61 that results from the armature motion, and by integration of this progression over the spring travel distance, through which the first spring 61 is thereby compressed. Next, the energy values that have been determined in this manner are compared with one another, and the pre-stressing of the first spring 61 is adjustingly set in such a manner so that the same energy is stored in the two springs ~~61, 61,~~ 61, 62, if these are compressed by the stroke travel distance Im. The actuator is only installed into the internal combustion machine after this adjustment.

[RESPONSE CONTINUES ON NEXT PAGE]